Claims

1. A method of attaching a thermally conductive film to an integrated circuit (IC) chip, comprising the steps of:

positioning a thermally conductive film on a first side of a block;

positioning an IC wafer on the film, wherein a non-active side of the wafer is in contact with the film, and wherein the IC wafer includes a plurality of chips;

positioning a first surface of an elastomer pad in contact with an active side of the wafer, wherein the active side of the wafer is opposite the non-active side of the wafer;

applying a predetermined pressure between a second side of the block that is opposite the first side and second surface of the elastomer pad that is opposite the first surface; and

heating the film, the block, the wafer and the elastomer pad to a predetermined temperature for a predetermined time while the predetermined pressure is applied to bond the film to the wafer, wherein the film does not bond to the block.

2. The method of claim 1, wherein the film is a graphite filled thermoplastic epoxy material.

3. The method of claim 1, wherein the coefficient of thermal expansion (CTE) of the film is about 29 ppm/°C.

4. The method of claim 1, wherein the coefficient of thermal expansion (CTE) of the film is about 29 ppm/°C.

5. The method of claim 1, wherein the glass transition temperature of the film is about 200 degrees Celsius.

6. The method of claim 1, wherein the glass transition temperature of the film is about 200 degrees Celsius.

7. The method of claim 1, wherein the heat and the pressure are applied for between about forty-five to sixty minutes, and wherein the pressure is about 25 pounds per square inch (PSI) and the temperature is about 130 degrees Celsius.

8. The method of claim 1, wherein the block is made of TEFLON.

9. The method of claim 1, further including the steps of:

removing the applied heat and pressure from the wafer;

applying an adhesive tape to the wafer;

dicing individual ones of the chips from the wafer;

electrically attaching at least one of the diced chips to a substrate;

placing the chip and its associated film against a heat sink backplate; and

applying a bonding temperature to the chip to bond the film with the heat sink backplate.

10. The method of claim 9, wherein the chips are in one of a flip chip package and a chip scale package (CSP).

11. A method of attaching a thermally conductive film to an integrated circuit (IC) chip, comprising the steps of:

positioning a thermally conductive film on a first side of a TEFLON block, wherein the film is a graphite filled thermoplastic epoxy material;

positioning an IC wafer on the film, wherein a non-active side of the wafer is in contact with the film, and wherein the IC wafer includes a plurality of chips;

positioning a first surface of an elastomer pad in contact with an active side of the wafer, wherein the active side of the wafer is opposite the non-active side of the wafer;

applying a predetermined pressure between a second side of the block that is opposite the first side and second surface of the elastomer pad that is opposite the first surface; and

heating the film, the block, the wafer and the elastomer pad to a predetermined temperature for a predetermined time while the predetermined pressure is applied to bond the film to the wafer, wherein the film does not bond to the block.

12. The method of claim 11, wherein the coefficient of thermal expansion (CTE) of the film is about 29 ppm/°C.

13. The method of claim 11, wherein the glass transition temperature of the film is about 200 degrees Celsius.

14. The method of claim 11, wherein the heat and the pressure are applied for between about forty-five to sixty minutes, and wherein the pressure is about 25 pounds per square inch (PSI) and the temperature is about 130 degrees Celsius.

15. The method of claim 11, further including the steps of:

removing the applied heat and pressure from the wafer;

applying an adhesive tape to the wafer;

dicing individual ones of the chips from the wafer;

electrically attaching at least one of the diced chips to a substrate;

placing the chip and its associated film against a heat sink backplate; and

applying a bonding temperature to the chip to bond the film with the heat sink backplate.

16. The method of claim 15, wherein the chips are in one of a flip chip package and a chip scale package (CSP).

17. A method of attaching a thermally conductive film to an integrated circuit (IC) chip, comprising the steps of:

positioning a thermally conductive film on a first side of a TEFLON block, wherein the film is a graphite filled thermoplastic epoxy material;

positioning an IC wafer on the film, wherein a non-active side of the wafer is in contact with the film, and wherein the IC wafer includes a plurality of chips;

positioning a first surface of an elastomer pad in contact with an active side of the wafer, wherein the active side of the wafer is opposite the non-active side of the wafer;

applying a predetermined pressure between a second side of the block that is opposite the first side and second surface of the elastomer pad that is opposite the first surface; and

heating the film, the block, the wafer and the elastomer pad to a predetermined temperature for a predetermined time while the predetermined pressure is applied to bond the film to the wafer, wherein the coefficient of thermal expansion (CTE) of the film is about 29 ppm/°C, and wherein the glass transition temperature of the film is about 200 degrees Celsius and the film does not bond to the block.

18. The method of claim 17, wherein the heat and the pressure are applied for between about forty-five to sixty minutes, and

wherein the pressure is about 25 pounds per square inch (PSI) and the temperature is about 130 degrees Celsius.

19. The method of claim 17, further including the steps of:

removing the applied heat and pressure from the wafer;

applying an adhesive tape to the wafer;

dicing individual ones of the chips from the wafer;

electrically attaching at least one of the diced chips to a substrate;

placing the chip and its associated film against a heat sink backplate; and

applying a bonding temperature to the chip to bond the film with the heat sink backplate.

20. The method of claim 19, wherein the chips are in one of a flip chip package and a chip scale package (CSP).

21. An electronic module, comprising:

a substrate;

a heat sink;

an integrated circuit (IC) chip electrically coupled to conductive traces of the substrate on an active side of the chip, wherein the chip includes a thermally conductive film located between a backside of the heat sink and a non-active side of the chip, and wherein the thermally conductive film is initially bonded to the chip through the following steps:

positioning the thermally conductive film on a first side of a block;

positioning an IC wafer on the film, wherein a non-active side of the wafer is in contact with the film, and wherein the IC wafer includes the chip;

positioning a first surface of an elastomer pad in contact with an active side of the wafer, wherein the active side of the wafer is opposite the non-active side of the wafer;

applying a predetermined pressure between a second side of the block that is opposite the first side and second surface of the elastomer pad that is opposite the first surface; and

heating the film, the block, the wafer and the elastomer pad to a predetermined temperature for a predetermined time while the predetermined pressure is applied, wherein the film does not bond to the block.